Research report on the evaluation on Malaysian wood products to Europe- A comparative advantage perspective, in regards of recent evalutions in European forest sector

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Abstract

As the growing trade in timber and wood products increasing, it has gained more attention from the main supplier in increasing the export competitiveness of timber and related products. Therefore, countries with large forest resources have an advantage in maximizing the resources in fulfilling the world demand. Given performance of Malaysia on timber exports, this study is to provide the opportunities and benefits as well as challenges facing by Malaysian exporters to penetrate the global market. This paper analyses the pattern of Malaysian export on wood and forest products (excluding furniture) to European Union by estimating the revealed comparative advantage indices. This study uses revealed comparative advantage (RCA) framework developed by Balassa (1956) to examine the export competitiveness of Malaysian wood and forest products by using data from United Nations Commodity Trade Statistics from 1999-2006. The results explain the performance of Malaysian wood exports in competing with other exporters to Europe. Based on the findings, some policy in expanding the exports and increase the comparative advantage of Malaysian wood and forest products also drawn.

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Introduction

Generally, international trade has been perceived as a vital mechanism for growing domestic economy through the expansion of exports and imports. It also helps country to grow and become more competitive in the world market. As the growing trade in timber and wood products increasing, it has gained more attention from the main supplier in increasing the export competitiveness of the timber and related products. Therefore, countries with large forest resources have an advantage in maximizing the resources in fulfilling the world demand. Europe, America and Asia are the main importing and exporting regions in forest products (Hillring, 2006; FAO, 2007[1]). According to FAO (2007), Europe is considered as the largest trading region in the world in terms of global import and export values.

Table 1: EU15 imports and export of wood and forest products from world in 1999-2006

Year	Import values from world (US dollar)	Export values to world (US dollar)
1999	25,586,089,399	18,238,585,659
2000	25,142,184,511	19,211,909,153
2001	23,693,164,389	18,745,232,307
2002	24,922,859,969	20,727,194,206
2003	29,843,832,780	24,467,981,278
2004	34,767,589,339	28,579,493,883
2005	36,339,209,671	30,192,247,512
2006	40,815,364,440	34,273,821,817

Source: United Nations COMTRADE (2008)

For Malaysia, exports of the natural resources and related products as well as manufactured goods have much contribution to the development of Malaysian economy. Besides that, with the fact that 60% of Malaysia is covered with natural forest, it is difficult to ignore that forest product industry can play a key role and has economic potential in further developing the economy. Furthermore, forest product industry has been recognized can generates more foreign exchange than any other natural resources in Malaysian economy. Therefore taking Europe as the potential markets for Malaysia to

[1] Food and Agricultural Organization of United Nations (2007), State of the World's Forests 2007, Electronic Publishing Policy and Support Branch, Communication Division, FAO, Rome.

expand the exports of forest and wood products in the global market, this research is purposely to make a new movement in penetrating the global market focus mainly on European countries.

Objectives of work

This work analyzes the revealed comparative advantage of wood and forest products from Malaysia to Europe. This research has the following objectives:

1. To identify the revealed comparative advantage of wood and forest products from Malaysia in exporting the products to Europe.
2. To harness the export competitiveness of Malaysian products to Europe.

This research differs from past study in several ways. Firstly, it attempts to identify the revealed comparative advantage of Malaysian wood industry to world and focus on Europe. This research particularly focuses on the trade between Malaysia and Europe in wood and forest products (excluding furniture). This study may contribute to harness the export competitiveness of Malaysian forest industry at a global market. Indeed, this is to provide the opportunities and benefit as well as challenges facing by Malaysian exporters to penetrate the global market.

Revealed Comparative Advantage

Generally, the concept of comparative advantage is defined as a country/ region has low relative cost a good compared to other countries (Deardorff, 1998)[2]. The concept of revealed comparative advantage is using in analyzing the relative strengths of nations in different sectors of economic activity (Uusivouri and Tervo, 2002)[3]. According to Dowling and Cheang (2000)[4], revealed comparative advantage can be used to explore the association between industrial and economic development as well as trade. In addition it can be used to identify the production structures and patterns of trade at different stages

[2] Deardorff, A. V. (1998), Benefits and Costs of Following Comparative Advantage, Research Seminar in International Economics, Discussion Paper No.423, University of Michigan, US.
[3] Uusivuori, J. & Tervo, M. (2002), Comparative advantage and forest endowment in forest products trade: Evidence from panel data of OECD countries, Journal of Forest Economics Vol.8, pp. 53-75.
[4] Dowling, M & Cheang, C.T (2000), Shifting Comparative Advantage in Asia: New Test of the "Flying Geese" Model, Journal of Asian Economics, Vol.11, pp. 443-463.

of economic development. Furthermore, revealed comparative advantage indices can be used to analyzed changes in comparative advantage, structure adjustment in individual industries, countries and/or regions as well as trade patterns (Yue and Hua, 2002).

Literature found that a country with larger forest endowments exhibit comparative advantage in their exports as compared to countries with lesser forest endowments (Uusivuori and Tervo, 2002; Prestemon and Buongiorno, 1997). According to Uusivuori and Tervo (2002), they also believe that country with relatively richer forest assets will also have larger net exports of forest products.

The Balassa index of revealed comparative advantage

In determining the comparative advantage of a country in a specific commodity, Heckscher-Ohlin (H-O) theory attributes from its relative factor scarcity such as factor endowments ratios (Utkulu and Seymen, 2004). However, it was found some difficulties in measuring comparative advantage of a country by H-O theory due to the unobservable relative price under autarky. Instead, Balassa suggested measuring comparative advantage of a country using observed trade patterns. Thus, to understand comparative advantage from observed data is named "revealed" comparative advantage.

This research is using the approach of Balassa (1965) on revealed comparative advantage methodology. This revealed comparative advantage methodology also has been used in many studies before (refer Yue and Hua, 2002[5]; Utkulu and Seymen, 2004[6]). Revealed comparative advantage pioneered by Balassa assumed the true pattern of comparative advantage can be observed from post-trade data (Bender and Li, 2002[7]; Utkulu and Seymen, 2004). Therefore, Balassa index trying to identify a "revealed" comparative advantage rather than determining the underlying sources of comparative advantage.

[5] Yue, C. & Hua, P. (2002), Does Comparative Advantage Explains Export Patterns in China, China Economic Review, Vol. 13, pp. 276-296.

[6] Utkulu, U. & Seymen, D. (2004), Revealed Comparative Advantage and Competitiveness: Evidence for Turkey vis-à-vis the EU15, Presented at the European Trade Study Group 6th Annual Conference, ETSG, Nottingham, UK.

[7] Bender, S. & Li, K.W (2002), The Changing Trade and Revealed Comparative Advantages of Asian and Latin American Manufacture Exports, Center Discussion Paper No. 843, Economic Growth Center, Yale University, United States.

Based on Balassa (1965), revealed comparative advantage measures the intensity of a country's export of a good relative to the intensity of world exports of that good (Coxhead, 2007)[8].

$$RCA_{jkt} = \frac{(X^{j}_{kt}/X^{j}_{Kt})}{(X^{W}_{kt}/X^{W}_{Kt})}$$

Referring to the formula, X is the export of a country for a particular good/commodity, *j*, *k* and *t* denote as a country, good/commodity and time period respectively. K denotes the total of all exports from country *j* or the world (*W*) respectively. If the index exhibit value greater than one, the sector or products has a comparative advantage in the production of the goods and if index less than one, it indicates a comparative disadvantage in the production of the products.

To calculate the index of revealed comparative advantage of Malaysian exports in wood and forest products, we are using the data in United Nation Commodity Trade Statistics Database (UN Comtrade) from 1999-2006. The 8 years time span has been analyzing in determining the comparative advantage of export for wood and forest products from Malaysia to Europe. The analysis takes place for about 21 types of wood and articles of wood in HS 4-digit classification for exports. According to Dowling and Cheang (2000), to measure the accurateness of the export share of revealed comparative advantage index by Balassa, it is suitable only for two-trade. Based on the principle, a country should export the products that use its relative abundant factor intensively and import the goods that use its relative scarce resources (Yue and Hua, 2002).

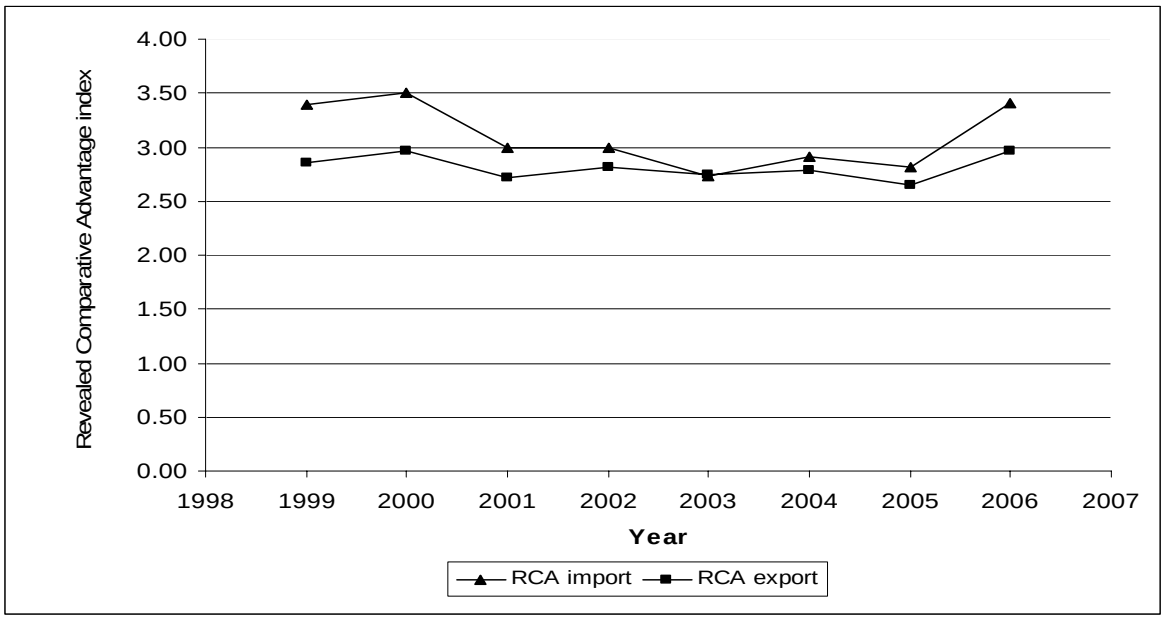
Result and Discussion

Analysis take place for the wood and forest based products from Malaysia to Europe (excluding furniture). Generally, it was found that Malaysia has 3 times advantage (in average) in exporting the wood and forest products to Europe compared to other global

[8] Coxhead, I. (2007), A New Resource Curse? Impacts of China's Boom on Comparative Advantage and Resource Dependence in Southeast Asia, World Development Journal, Vol.35, No.7, pp. 1099-1119.

exporters. It shows increasing trend from 2005 and expected to increase in coming years due to the increasing of global demand on wood and forest products.

Figure 1: Revealed Comparative Advantage of Malaysian wood and forest products (excluding furniture) to the European market

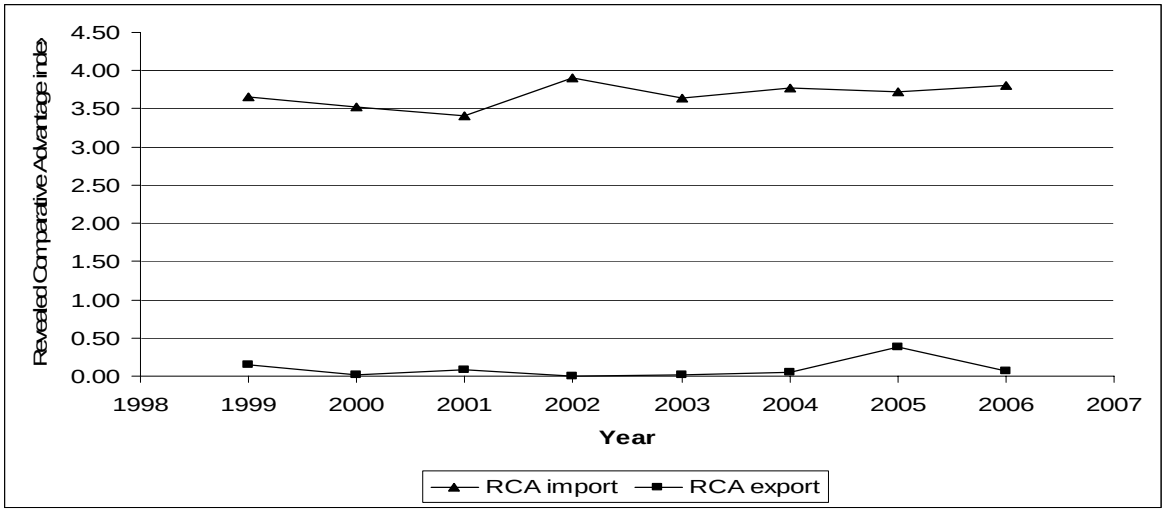


Source: United Nations COMTRADE (2008)

Figure 2 shows the revealed comparative advantage of wood charcoal including shell or nut charcoal (HS4402). The analysis showed that there is a big difference of data between import and export of the products. However, the comparative advantage of Malaysia in this product is high due to the importing index showed in the revealed comparative advantage analysis.

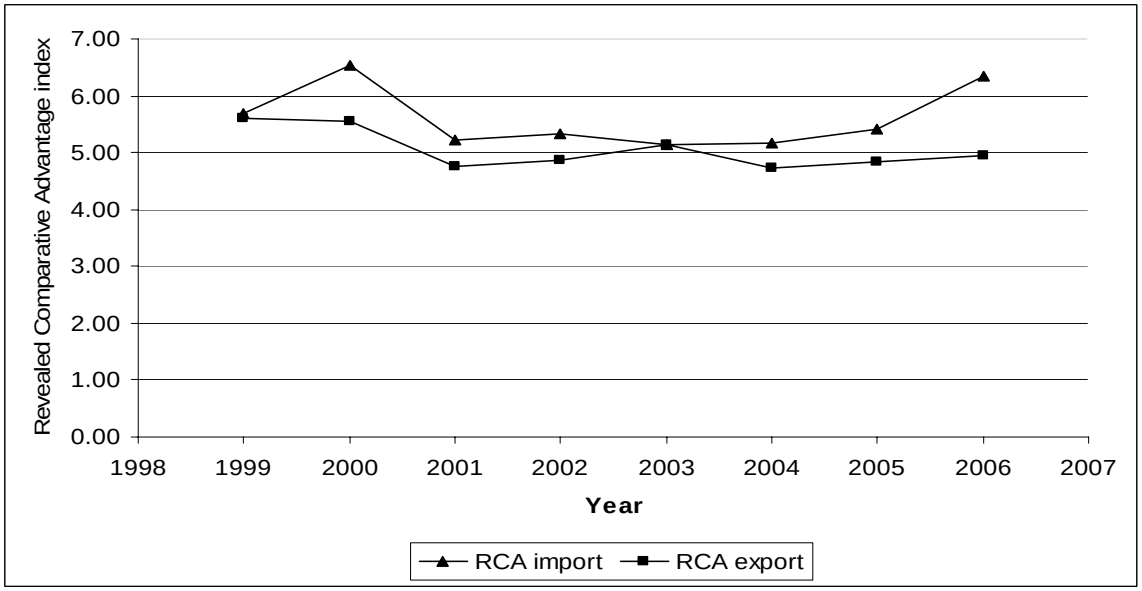
Furthermore, figure 3 indicates that Malaysia has high revealed comparative advantage on wood sawn, chipped lengthwise, sliced or peeled (HS4407). It can be seen Malaysia has high potential in exporting and marketing the product to EU and in average it about 5 times more advantage than other exporters.

Figure 2: Revealed Comparative Advantage of Malaysian wood charcoal including shell or nut charcoal (HS4402) from 1999-
2006



Source: United Nations COMTRADE (2008)

Figure 3: Revealed Comparative Advantage of Malaysian wood sawn, chipped lengthwise, sliced or peeled (HS4407) from 1999-2006

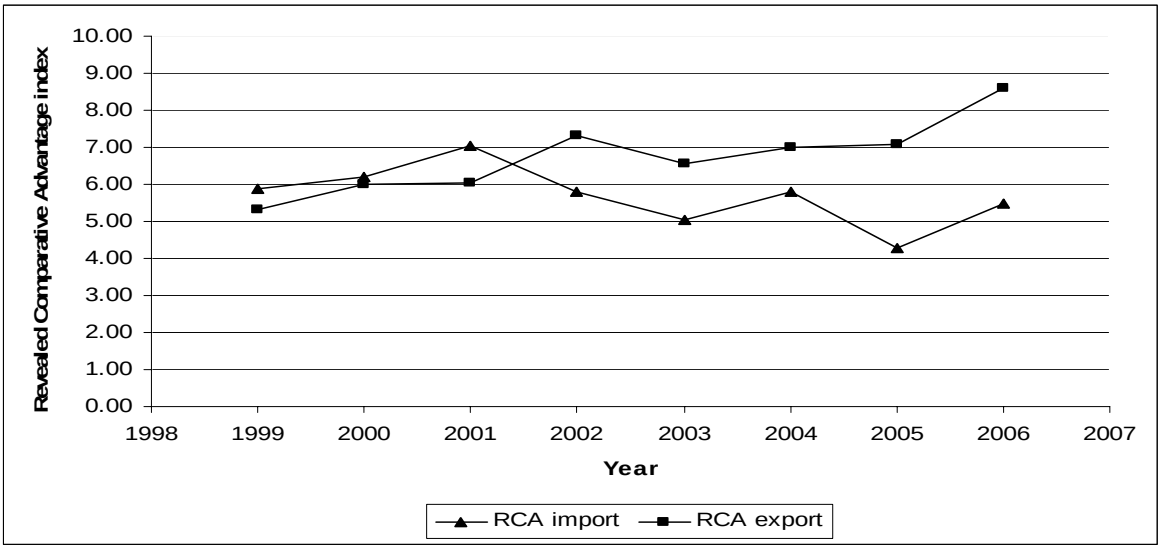


Source: United Nations COMTRADE (2008)

Based on figure 4, the revealed comparative advantage of Malaysian on wood continuously shaped along any edges (HS4409) considered having the highest comparative advantage compared to any other wood products exporting to EU. The

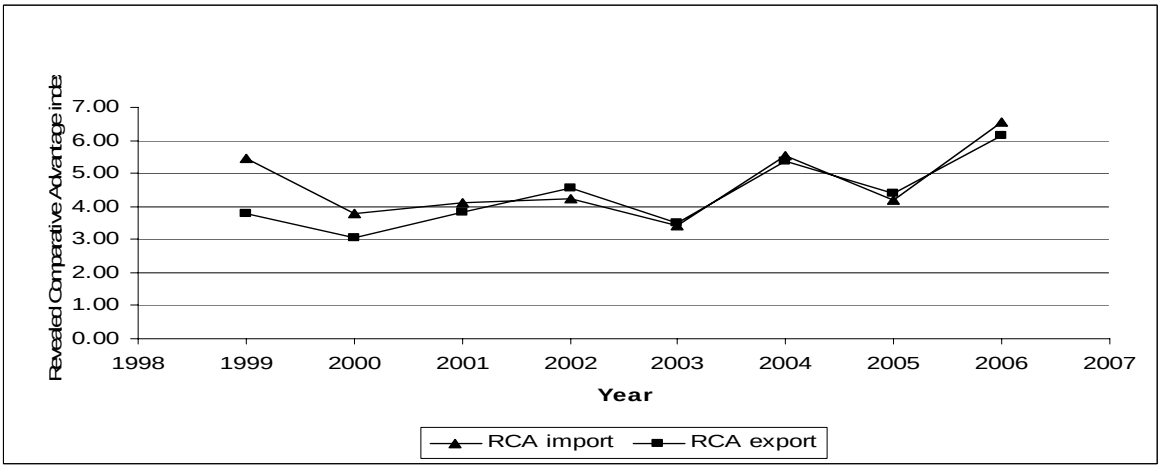
revealed comparative advantage index showed an average about 7 times having advantage in promoting and marketing the product to Europe. On the same situation, Malaysian plywood, veneered panels and similar laminated wood (HS4412) also having a good indicator in revealed comparative advantage in exporting the products to EU. The trends indicated an increasing trend throughout the years.

Figure 4: Revealed Comparative Advantage of Malaysian wood continuously shaped along any edges (HS4409) from 1999-2006



Source: United Nations COMTRADE (2008)

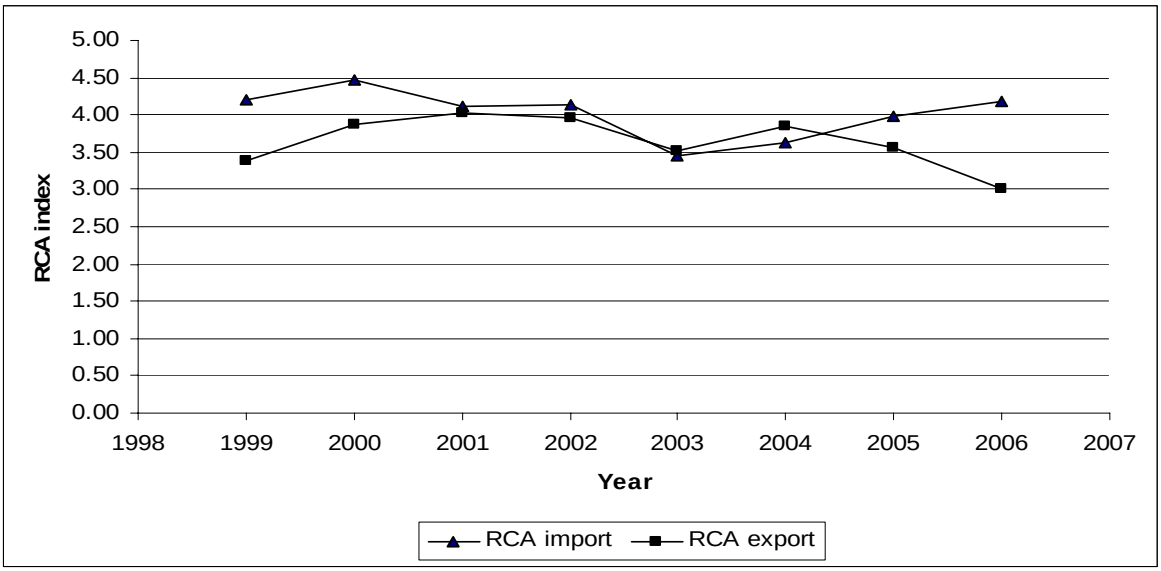
Figure 5: Revealed Comparative Advantage of Malaysian plywood, veneered panels and similar laminated wood (HS4412) from 1999-2006



Source: United Nations COMTRADE (2008)

In addition, the builder joinery and carpentry of wood (HS4418) have comparative advantage in exporting the products to EU due to the high index of revealed comparative advantage. Malaysian exporters have the average about 4 times advantage to exports the products to EU compared to other world exporters.

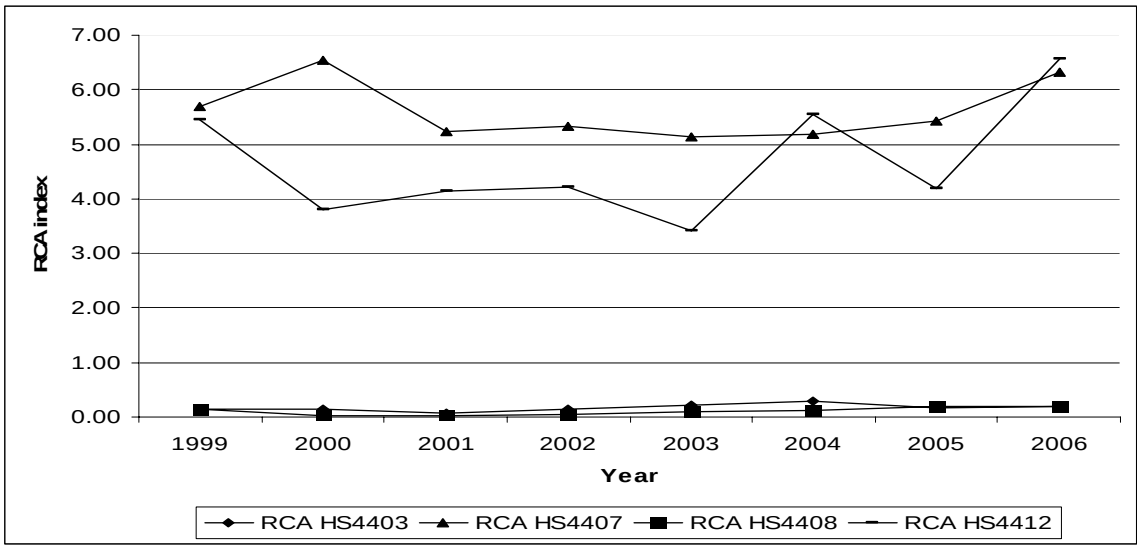
Figure 6: Revealed Comparative Advantage of Malaysian builder joinery and carpentry of wood (HS4418) from 1999-2006



Source: United Nations COMTRADE (2008)

However, we questioned whether the recent trends in Europe for certification of wood and forest products or new regulations as FLEGT has an impact on relative comparative advantage of Malaysian woods. Between, we also analyze the codes that has been interested by FLEGT in the forest sector such are wood in the rough or roughly squared (HS4403), wood used for tramway sleepers (HS4406), wood sawn, chipped lengthwise, sliced or peeled (HS4407), veneers and sheets for plywood etc <6mm thick (HS4408) as well as plywood, veneered panels and similar laminated wood (HS4412). Based on figure 7, we found that Malaysia has high revealed comparative advantage in two codes that are interested by FLEGT which are wood sawn, chipped lengthwise, sliced or peeled (HS4407) and plywood, veneered panels and similar laminated wood (HS4412) in exporting to Europe.

Figure 7: Revealed Comparative Advantage of Malaysian wood interested by FLEGT from 1999-2006



Source: United Nations COMTRADE (2008)

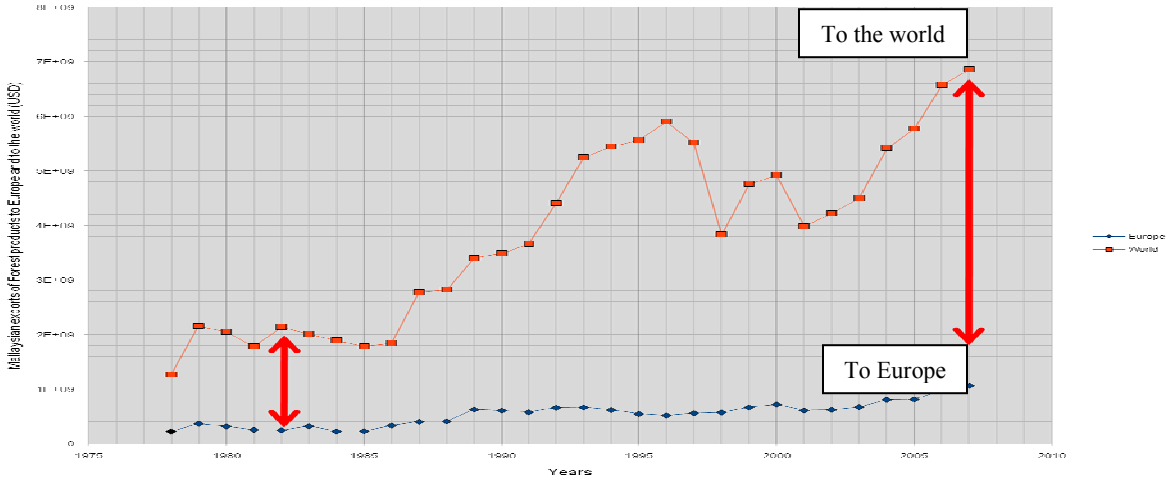
Interestingly, even though we know that Europe is the main global market for certified products, but in terms of export share of forest products from Malaysia to Europe relative to world exports shows continuously decreasing trend since nineties. Furthermore for the Europe market per se, the declining trends can be seen clearly (refer figure 9). From point of view of Malaysian exporters, the European forest product sectors have evolved in the recent years in a "green market". Therefore, they believed that the competitiveness of the tropical forest products in this market are supposed now to be their ability to display proves of legality and eco certification characteristics. With the continuous decreases of Malaysian wood and forest products market share in Europe compared to other countries, it is clear that the market attraction of Europe fails to create real market incentives despite the efforts of Malaysia through its MTCC[9] or through its involvement in FLEGT[10] process.

While the volume of sales to Europe for Malaysia are not decreasing, but the relative sales shrink from around 10-18% to less than 6%. This showed that selling to Europe is not compulsory but the other growing markets create new competitiveness opportunities

[9] Malaysian Timber Council Certificates
[10] Forest Law Enforcement, Governance and Trade

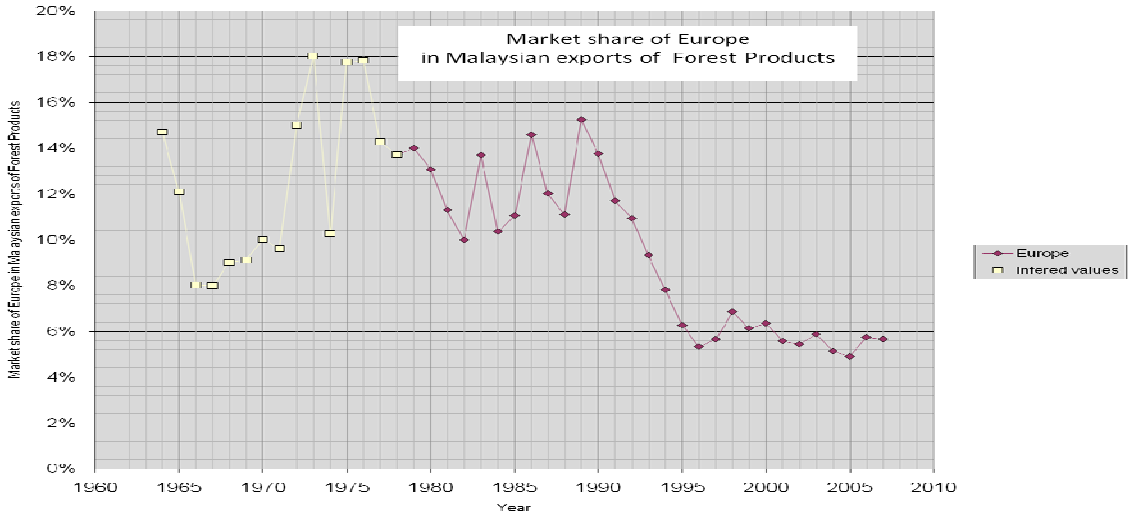
for Malaysia, letting only a few market niches still being "Euro-centered". In the case of Malaysia, forest certification is not a "transnational private regulation tool" promoting sales to Europe as it should be. It has rather, more an impact on the realistic "image" of the country itself, than on the forest products themselves. Conversely it is too soon to see any effects created by the ongoing FLEGT process. In a nutshell, we can conclude that the "green" criteria evolving in European forest sector recently have only a marginal effect on Malaysian exporters compared to the differences of the various market segments (products) between themselves.

Figure 8: Malaysian exports of forest products to Europe and to the World (US dollar)



Source: United Nations COMTRADE (2008)

Figure 9: Market share of Europe in Malaysian export of forest products



Source: United Nations COMTRADE (2008)

Summary and Conclusion

In a nutshell, even though the exports share of Malaysian wood and forest products are decreasing, but the absolute sales to Europe are not decreasing (refer annex 2). However, due to declining trends of exports share in wood and forest products from Malaysia to Europe recently, we can say that Europe is becoming less important for Malaysian exporters in forest products exports. Despite of that, relative competitiveness of forest products from Malaysia has improved for some categories since 2002 after the first batches of Malaysian Timber Certification Scheme has launched.

In conclusion, Malaysia should take full advantage of the natural resource abundance to serve as an engine for economic growth. In addition, export promotion of wood and forest products may play an important role in supporting country for long run growth to maintain the export competitiveness of the industry. The export promotion scheme and incentives should be given to the exporters in promoting and expanding the export to the global market.

Extended Abstract

Historically, forest products trade has been expanding throughout the last few decades. To date, world trade in forest products are dominated by the developed countries both in imports and exports (Hillring, 2006; Buongiorno et al., 2003). Europe, America and Asia are the main importing and exporting regions in forest products (Hillring, 2006; FAO, 2007[11]). According to FAO (2007), Europe is considered as the largest trading region in the world which in 2004, accounted for 47 and 56 percent of global import and export values respectively. The growing market in Europe are the construction, furniture, packaging and publishing and some other areas that consume forest products for their industry (Rametsteiner and Schwarzbauer, 1999)

As the growing trade in wood and forest products increasing, it has gained more attention from the main supplier in increasing the export competitiveness of the products. Thus, countries with large forest resources have an advantage in maximizing the resources in fulfilling the world demand. For Malaysia, becoming one of the main suppliers in the wood and forest products, the industry should maintain the competitiveness of the industry at the international level. Therefore, this research intends to analyze the comparative advantage of Malaysian wood and forest products in maintaining the export competitiveness of Malaysia to Europe (taking into account that Europe is the largest trading region in the world). Furthermore, the comparative advantage of wood and forest products (exclude furniture) from Malaysia will be analyzed in detail based on the Harmonized System (HS) codes in United Nations Commodity Trade Statistics database from 1999- 2006. The analyses will take place within 21 categories of wood and articles of wood in HS codes starting from HS44-HS4421.

This paper is using the approach of revealed comparative advantage (RCA) by Balassa (1965) in analyzing the strength of Malaysia in exporting the wood and forest products to

[11] Food and Agricultural Organization of United Nations (2007), State of the World's Forests 2007, Electronic Publishing Policy and Support Branch, Communication Division, FAO, Rome.

world market. According to Uusivouri and Tervo (2002)[12] the concepts of revealed comparative advantage is used in analyzing the relative strength of a nations in different sectors of economic activity. If the index exhibit value greater than one, the sector or products has a comparative advantage in the production of the goods and if index less than one, it indicates a comparative disadvantage in the production of the products.

The results showed that Malaysia has the comparative advantage based on the performance of exporting wood and forest products to Europe. Overall, it has been figured out that Malaysia has 3 times advantage (in average) in exporting the wood and forest products to Europe compared to other global exporters. The most advantage are gaining through export of wood charcoal (HS4402), wood sawn, chipped lengthwise sliced or peeled (HS4407), wood continuously shaped along any edges (HS4409) plywood, veneered panels and similar laminated wood (HS4412), builders joinery and carpentry of wood (HS4418) and articles of wood (HS4421). Correspondingly, all of the mentioned products are among the highest exports of Malaysia in wood and forest industry.

Keywords: revealed comparative advantage, Malaysia, wood and forest products

[12] Uusivouri, J. & Tervo, M. (2002), Comparative Advantage and Forest Endowment in Forest Products Trade: Evidence from Panel Data of OECD-countries, Journal of Forest Economics, Vol.8, p.53-75

Annex 1

Wood and articles of wood, wood charcoal (HS44)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	11.12	89.00
	RCAexport	8	5.88	47.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			11.000
Wilcoxon W			47.000
Z			-2.207
Asymp. Sig. (2-tailed)			.027
Exact Sig. [2*(1-tailed Sig.)]			.028[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	90% Confidence Interval	Lower Bound	.000
		Upper Bound	.134
Monte Carlo Sig. (1-tailed)	90% Confidence Interval	Lower Bound	.000
		Upper Bound	.134
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 2000000.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Fuel wood, wood in chips or particles, wood waste (HS4401)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	1	8	8.50	68.00
	2	8	8.50	68.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			32.000
Wilcoxon W			68.000
Z			.000
Asymp. Sig. (2-tailed)			1.000
Exact Sig. [2*(1-tailed Sig.)]			1.000[a]
Monte Carlo Sig. (2-tailed)	Sig.		1.000[b]
	95% Confidence Interval	Lower Bound	.688
		Upper Bound	1.000
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.040
		Upper Bound	.710
	Sig.		.375[b]

a. Not corrected for ties.

b. Based on 8 sampled tables with starting seed 1314643744.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export = RCA import

Wood charcoal (including shell or nut charcoal) (HS4402)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	12.50	100.00
	RCAexport	8	4.50	36.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			.000
Wilcoxon W			36.000
Z			-3.602
Asymp. Sig. (2-tailed)			.000
Exact Sig. [2*(1-tailed Sig.)]			.000[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 726961337.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Wood in the rough or roughly squared (HS4403)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	12.50	100.00
	RCAexport	8	4.50	36.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			.000
Wilcoxon W			36.000
Z			-3.363
Asymp. Sig. (2-tailed)			.001
Exact Sig. [2*(1-tailed Sig.)]			.000[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 2048628469.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Hoop wood, split poles, pile, pickets and stakes (HS4404)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	12.50	100.00
	RCAexport	8	4.50	36.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			.000
Wilcoxon W			36.000
Z			-3.363
Asymp. Sig. (2-tailed)			.001
Exact Sig. [2*(1-tailed Sig.)]			.000[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 926214481.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Wood sawn, chipped lengthwise, sliced or peeled (HS4407)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	11.12	89.00
	RCAexport	8	5.88	47.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			11.000
Wilcoxon W			47.000
Z			-2.205
Asymp. Sig. (2-tailed)			.027
Exact Sig. [2*(1-tailed Sig.)]			.028[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 926214481.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Veneers and sheets for plywood etc <6mm thick (HS4408)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	9.25	74.00
	RCAexport	8	7.75	62.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			26.000
Wilcoxon W			62.000
Z			-.633
Asymp. Sig. (2-tailed)			.526
Exact Sig. [2*(1-tailed Sig.)]			.574[a]
Monte Carlo Sig. (2-tailed)	Sig.		.625[b]
	95% Confidence Interval	Lower Bound	.388
		Upper Bound	.862
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.085
		Upper Bound	.540
	Sig.		.312[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 2000000.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e. RCAexport=RCAimport

Wood continuously shaped along any edges (HS4409)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	6.00	48.00
	RCAvalue	8	11.00	88.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			12.000
Wilcoxon W			48.000
Z			-2.100
Asymp. Sig. (2-tailed)			.036
Exact Sig. [2*(1-tailed Sig.)]			.038[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 926214481.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e. RCA export≠RCA import

Particle board, similar board, wood, ligneous material (HS4410)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	11.75	94.00
	RCAexport	8	5.25	42.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			6.000
Wilcoxon W			42.000
Z			-2.900
Asymp. Sig. (2-tailed)			.004
Exact Sig. [2*(1-tailed Sig.)]			.005[a]
Monte Carlo Sig. (2-tailed)	Sig.		.062[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.181
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.181
	Sig.		.062[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 1502173562.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e. RCA export≠RCA import

Fibreboard of wood or other ligneous materials (HS4411)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	1	8	9.44	75.50
	2	8	7.56	60.50
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			24.500
Wilcoxon W			60.500
Z			-.789
Asymp. Sig. (2-tailed)			.430
Exact Sig. [2*(1-tailed Sig.)]			.442[a]
Monte Carlo Sig. (2-tailed)	Sig.		.375[b]
	95% Confidence Interval	Lower Bound	.138
		Upper Bound	.612
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.287
	Sig.		.125[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 957002199.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export=RCA import

Plywood, veneered panels and similar laminated wood (HS4412)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	9.19	73.50
	RCAexport	8	7.81	62.50
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			26.500
Wilcoxon W			62.500
Z			-.578
Asymp. Sig. (2-tailed)			.563
Exact Sig. [2*(1-tailed Sig.)]			.574[a]
Monte Carlo Sig. (2-tailed)	Sig.		.688[b]
	95% Confidence Interval	Lower Bound	.460
		Upper Bound	.915
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.181
	Sig.		.062[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 221623949.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e. RCA export=RCA import

Densified wood in blocks, plates, strips or profile (HS4413)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	12.50	100.00
	RCAexport	8	4.50	36.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			.000
Wilcoxon W			36.000
Z			-3.388
Asymp. Sig. (2-tailed)			.001
Exact Sig. [2*(1-tailed Sig.)]			.000[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 92208573.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Wooden frames for painting etc. (HS4414)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	9.75	78.00
	RCAexport	8	7.25	58.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			22.000
Wilcoxon W			58.000
Z			-1.053
Asymp. Sig. (2-tailed)			.293
Exact Sig. [2*(1-tailed Sig.)]			.328[a]
Monte Carlo Sig. (2-tailed)	Sig.		.188[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.379
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.287
	Sig.		.125[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 329836257.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export = RCA import

Wooden cases, boxes, crates, drums etc. (HS4415)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	6.38	51.00
	RCAexport	8	10.62	85.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			15.000
Wilcoxon W			51.000
Z			-1.829
Asymp. Sig. (2-tailed)			.067
Exact Sig. [2*(1-tailed Sig.)]			.083[a]
Monte Carlo Sig. (2-tailed)	Sig.		.062[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.181
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.181
	Sig.		.062[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 1993510611.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export = RCA import

Tableware and kitchenware of wood (HS4419)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	9.06	72.50
	RCAexport	8	7.94	63.50
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			27.500
Wilcoxon W			63.500
Z			-.473
Asymp. Sig. (2-tailed)			.636
Exact Sig. [2*(1-tailed Sig.)]			.645[a]
Monte Carlo Sig. (2-tailed)	Sig.		.750[b]
	95% Confidence Interval	Lower Bound	.538
		Upper Bound	.962
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.138
		Upper Bound	.612
	Sig.		.375[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 562334227.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export = RCA import

Ornaments of wood, jewel, cutlery casket and cases (HS4420)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	RCAimport	8	9.25	74.00
	RCAexport	8	7.75	62.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			26.000
Wilcoxon W			62.000
Z			-.633
Asymp. Sig. (2-tailed)			.526
Exact Sig. [2*(1-tailed Sig.)]			.574[a]
Monte Carlo Sig. (2-tailed)	Sig.		.375[b]
	95% Confidence Interval	Lower Bound	.138
		Upper Bound	.612
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.379
	Sig.		.188[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 79654295.

c. Grouping Variable: RCA

Note: RCA import and export have no significance difference i.e.
RCA export = RCA import

Articles of wood, nes. (HS4421)

Ranks

	RCA	N	Mean Rank	Sum of Ranks
RCAvalue	1	8	11.50	92.00
	2	8	5.50	44.00
	Total	16		

Test Statistics[c]

			RCAvalue
Mann-Whitney U			8.000
Wilcoxon W			44.000
Z			-2.521
Asymp. Sig. (2-tailed)			.012
Exact Sig. [2*(1-tailed Sig.)]			.010[a]
Monte Carlo Sig. (2-tailed)	Sig.		.000[b]
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.171
	Sig.		.000[b]

a. Not corrected for ties.

b. Based on 16 sampled tables with starting seed 1573343031.

c. Grouping Variable: RCA

Note: RCA import and export have significance difference i.e.
RCA export ≠ RCA import

Significance Difference

HS44	wood and articles of wood, wood charcoal
HS4401	fuel wood, wood in chips or particles, wood waste
HS4403	wood in the rough or roughly squared
HS4404	hoop wood, split poles, pile, pickets and stakes
HS4407	wood sawn, chipped lengthwise, sliced or peeled
HS4409	wood continuously shaped along any edges
HS4410	particle board, similar board, wood, ligneous material
HS4413	densified wood in blocks, plates, strips or profile
HS4421	articles of wood, nes

No Significance Difference

HS4402	wood charcoal (including shell or nut charcoal)
HS4408	veneers and sheets for plywood etc <6mm thick
HS4411	fibreboard of wood or other ligneous materials
HS4412	plywood, veneered panels and similar laminated wood
HS4414	wooden frames for painting etc
HS4415	wooden cases, boxes, crates, drums etc
HS4419	tableware and kitchenware of wood
HS4420	ornaments of wood, jewel, cutlery casket and cases

#Note: Some HS codes are out of analysis due to data limitations.

Annex 2

Table 1: Total imports of EU15 from Malaysia 1999

Country	Trade value (in US dollar)
Austria	$156,994,868
Belgium	$623,082,558
Denmark	$141,491,745
Finland	$159,722,271
France	$1,449,380,864
Germany	$2,706,157,568
Greece	$74,995,163
Ireland	$616,775,616
Italy	$613,249,951
Luxembourg	$1,875,673
Netherlands	$2,128,274,708
Portugal	$68,706,868
Spain	$500,782,620
Sweden	$179,371,735
United Kingdom	$3,286,006,967
Total	**$12,706,869,175**

Source: UN COMTRADE (2008)

Table 2: Total imports of EU15 from Malaysia 2000

Country	Trade value (in US dollar)
Austria	$221,045,418
Belgium	$647,289,113
Denmark	$145,771,707
Finland	$271,326,048
France	$1,786,234,927
Germany	$3,460,752,000
Greece	$86,265,920
Ireland	$603,697,433
Italy	$655,917,888
Luxembourg	$11,915,193
Netherlands	$1,840,323,527
Portugal	$81,431,544
Spain	$507,591,360
Sweden	$362,095,785
United Kingdom	$3,729,126,509
Total	**$14,410,784,372**

Source: UN COMTRADE (2008)

Table 3: Total imports of EU15 from Malaysia 2001

Country	Trade value (in US dollar)
Austria	$519,064,174
Belgium	$619,791,562
Denmark	$181,141,168
Finland	$224,047,950
France	$1,766,834,522
Germany	$3,167,067,000
Greece	$97,537,888
Ireland	$522,860,373
Italy	$582,940,906
Luxembourg	$3,906,622
Netherlands	$2,198,217,955
Portugal	$62,418,256
Spain	$503,635,584
Sweden	$183,754,961
United Kingdom	$2,975,597,592
Total	**$13,608,816,513**

Source: UN COMTRADE (2008)

Table 4: Total imports of EU15 from Malaysia 2002

Country	Trade value (in US dollar)
Austria	$448,028,610
Belgium	$554,723,454
Denmark	$173,214,026
Finland	$226,508,624
France	$1,902,095,946
Germany	$3,237,282,000
Greece	$80,126,560
Ireland	$629,789,080
Italy	$537,386,555
Luxembourg	$1,527,404
Netherlands	$1,639,334,019
Portugal	$58,719,376
Spain	$548,496,832
Sweden	$173,871,168
United Kingdom	$2,742,378,210
Total	**$12,953,481,864**

Source: UN COMTRADE (2008)

Table 5: Total imports of EU15 from Malaysia 2003

Country	Trade value (in US dollar)
Austria	$265,527,694
Belgium	$586,205,518
Denmark	$199,009,346
Finland	$244,095,888
France	$1,840,211,352
Germany	$3,959,083,000
Greece	$104,438,849
Ireland	$530,075,936
Italy	$642,321,106
Luxembourg	$4,500,740
Netherlands	$3,798,470,010
Portugal	$77,831,654
Spain	$660,276,683
Sweden	$205,156,215
United Kingdom	$3,152,513,678
Total	**$16,269,717,669**

Source: UN COMTRADE (2008)

Table 6: Total imports of EU15 from Malaysia 2004

Country	Trade value (in US dollar)
Austria	$255,818,737
Belgium	$578,303,988
Denmark	$243,589,443
Finland	$335,699,185
France	$1,932,533,173
Germany	$4,616,722,000
Greece	$114,010,251
Ireland	$579,999,022
Italy	$804,880,701
Luxembourg	$4,264,269
Netherlands	$4,284,770,741
Portugal	$89,794,472
Spain	$827,678,422
Sweden	$197,714,802
United Kingdom	$3,664,826,179
Total	**$18,530,605,385**

Source: UN COMTRADE (2008)

Table 7: Total imports of EU15 from Malaysia 2005

Country	Trade value (in US dollar)
Austria	$318,368,591
Belgium	$629,017,142
Denmark	$337,979,074
Finland	$376,519,600
France	$1,843,832,122
Germany	$4,654,265,000
Greece	$85,178,072
Ireland	$698,665,884
Italy	$844,995,559
Luxembourg	$7,315,987
Netherlands	$4,956,957,509
Portugal	$77,845,349
Spain	$843,267,094
Sweden	$210,945,594
United Kingdom	$3,310,070,840
Total	**$19,195,223,417**

Source: UN COMTRADE (2008)

Table 8: Total imports of EU15 from Malaysia 2006

Country	Trade value
Austria	$457,595,605
Belgium	$679,943,394
Denmark	$246,736,301
Finland	$464,371,861
France	$2,111,609,134
Germany	$5,099,172,000
Greece	$109,817,237
Ireland	$522,140,411
Italy	$1,172,097,052
Luxembourg	$16,153,606
Netherlands	$5,687,018,558
Portugal	$123,162,922
Spain	$1,011,298,099
Sweden	$377,312,133
United Kingdom	$3,647,240,666
Total	**$21,725,668,979**

Source: UN COMTRADE (2008)